

1. An interference screw for use in securing a tissue graft to a bone, comprising:

a threaded body extending between a proximal end and a distal end along a central axis and being sized and configured for threadable insertion into a bone tunnel, the threaded body further comprising:

a proximal threaded section having an average diameter and an angled face with an angle relative to the central axis in a range of about 10° to about 80°; and

a distal threaded section, disposed between the proximal threaded section and the distal end, having an average diameter that is less than the average diameter of the proximal threaded section.
2. An interference screw as defined in claim 1, further including a recess, centered on the central axis and extending from the face at least partially through the interference screw, that is sized and configured to receive at least a portion of a drive shaft of a driver used to threadably insert the interference screw into a bone tunnel.
3. An interference screw as defined in claim 1, further including a tapered section disposed between the distal threaded section and the distal end that facilitates insertion of the distal end of the interference screw into a bone tunnel.
4. An interference screw as defined in claim 1, wherein the proximal threaded section is separated from the distal threaded section by a transition section.

5. An interference screw as defined in claim 4, wherein the transition section is threaded and tapered.

6. An interference screw as defined in claim 1, wherein the threaded body includes a single continuous thread of continuous pitch and helix angle extending between the proximal and distal ends, the interference screw optionally including a non-threaded portion adjacent at least one of the proximal or distal ends.

7. An interference screw as defined in claim 1, wherein the angle of the face corresponds to an angle of a bone tunnel into which the interference screw is threadably inserted so that, upon threadably inserting the interference screw into the bone tunnel, the face is substantially parallel to a bone surface surrounding the bone tunnel when the interference screw is oriented at an appropriate rotational angle.

8. An interference screw as defined in claim 1, wherein the face has an angle relative to the central axis in a range of about 20° to about 60°.

9. An interference screw as defined in claim 1, wherein the face has an angle relative to the central axis in a range of about 30° to about 40°.

10. An interference screw as defined in claim 1, wherein at least one of the proximal and distal threaded sections has a constant diameter.

11. An interference screw as defined in claim 1, wherein at least one of the proximal and distal threaded sections is at least partially tapered.

12. An interference screw as defined in claim 1, wherein the bone tunnel is surrounded by a cortical bone region extending from a bone surface and a cancellous bone region extending beneath the cortical bone region, wherein the proximal threaded section of the interference screw is sized so as to lie substantially within the cortical bone region, and the second threaded section is sized so as to lie substantially within the cancellous bone region, when the interference screw is completely inserted into the bone tunnel.

13. An interference screw as defined in claim 1, wherein the interference screw comprises at least one of poly-L-lactic acid, titanium, or stainless steel.

14. An interference screw as defined in claim 1, wherein the average diameter of the proximal threaded section is in a range of about 10 mm to about 12 mm and the average diameter of the distal threaded section is in a range of about 9 mm to about 11 mm.

15. An interference screw as defined in claim 1, wherein the average diameter of the proximal threaded section is about 1 mm greater than the average diameter of the distal threaded section.

16. An interference screw as defined in claim 1, wherein the interference screw has a length in a range of about 35 mm to about 40 mm.

17. An interference screw for use in securing a tissue graft to a bone, comprising:
a threaded body extending between a proximal end and a distal end along a central axis and being sized and configured for threadable insertion into a bone tunnel, the threaded body further comprising:

a proximal threaded section sized and configured so as to lie adjacent cortical bone when the interference screw is completely inserted into the bone tunnel, the proximal threaded section having an average diameter that is constant throughout at least a portion of the proximal threaded section;

a distal threaded section sized and configured so as to lie adjacent cancellous bone when the interference screw is completely inserted into the bone tunnel, the distal threaded section having an average diameter that is constant throughout at least a portion of the distal threaded section, wherein the average diameter of the distal threaded section is less than the average diameter of the proximal threaded section;

a single continuous thread of uniform pitch extending between the proximal and distal ends; and

a recess, centered on the central axis and extending from the proximal end at least partially through the interference screw, that is sized and configured to receive at least a portion of a drive shaft of a driver used to threadably insert the interference screw into a bone tunnel.

18. An interference screw as defined in claim 17, wherein the bone tunnel is formed at a predetermined angle relative to a bone surface surrounding the bone tunnel and wherein the proximal threaded section further includes a face that is obliquely angled relative to the central axis so that, upon threadably inserting the interference screw into the bone tunnel, the face is substantially parallel to the bone surface when the interference screw is oriented at an appropriate rotational angle.

19. An interference screw as defined in claim 17, further including a tapered section disposed between the distal threaded section and the distal end that facilitates insertion of the distal end of the interference screw into a bone tunnel, wherein the tapered section is optionally threaded.

20. An interference screw as defined in claim 17, wherein the proximal threaded section is separated from the distal threaded section by a threaded and tapered transition section.

21. An interference screw for use in securing a tissue graft to a bone, comprising:

a threaded body extending between a proximal end and a distal end along a central axis and being sized and configured for threadable insertion into a bone tunnel, the threaded body further comprising:

a proximal threaded section sized and configured so as to lie adjacent cortical bone when the interference screw is completely inserted into the bone tunnel, the proximal threaded section having an average diameter that is constant throughout at least a portion of the proximal threaded section, the proximal threaded section including an angled face with an angle relative to the central axis in a range of about 10° to about 80°;

a distal threaded section sized and configured so as to lie adjacent cancellous bone when the interference screw is completely inserted into the bone tunnel, the distal threaded section having an average diameter that is constant throughout at least a portion of the distal threaded section, wherein the average diameter of the distal threaded section is less than the average diameter of the proximal threaded section; and

a single continuous thread of uniform pitch extending between the proximal and distal ends.

22. A method of securing a tissue graft within a bone tunnel of constant diameter using an interference screw of discontinuous taper having portions of varying diameter.

WORKMAN, NYDEGGER & SEELEY

A PROFESSIONAL CORPORATION
ATTORNEYS AT LAW
1000 EAGLE GATE TOWER
60 EAST SOUTH TEMPLE
SALT LAKE CITY, UTAH 84111

WORKMAN, NYDEGGER & SEELEY
ATTORNEYS AT LAW
1000 EAGLE GATE TOWER
60 EAST SOUTH TEMPLE
SALT LAKE CITY, UTAH 84111